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PROGRESS OF BARBERRY ERADICATION CAMPAIGN
October 31, 1923.

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Original Survey

The sixth season of the barberry eradication campaign is rapidly drawing to a close. A summary of the year's activities to October 31, 1923, shows that 184 counties have been covered in the farm-to-farm survey and 208,956 bushes and 1,701,122 seedlings have been destroyed.

This farm-to-farm survey has progressed until all but a few counties have been covered once in each of the 8 States of the barberry eradication area west of the Mississippi River. In the 5 States east of the Mississippi over one-half of the counties also have been surveyed once. Each property in the counties surveyed has been visited.

Resurvey

A complete resurvey has been made of 299 of the 474 counties surveyed in previous years, and also of all cities and towns in the counties covered in this year's original farm-to-farm survey. In this resurvey 102,066 sprouting bushes and 909,607 seedlings were destroyed. Of this total of 1,011,673 sprouting bushes and seedlings destroyed, 905,894 were treated with chemicals. An attempt was made to find and destroy all bushes which had sprouted.

Second Survey

The early appearance of severe local epidemics of stem rust, which were traced to barberry bushes remaining in certain counties previously surveyed and thought to be clean, made it seem advisable to make a second systematic survey of several counties. The results obtained indicated that, in spite of the care used in the original survey, in which every property was visited, all barberries were not found. Some of the bushes found in the second survey were those cut down early in the campaign by property owners or tenants, and which had sprouted since. The State offices had no records of these bushes, and it is probable that they have sprouted and remained unobserved for several seasons. Others were bushes which had been overlooked in the first survey. It probably will be necessary to make a second survey in all counties in which many fruiting bushes have been found, as numerous seedlings may be expected to develop from the scattered seeds. It also will be advisable to survey a second time all counties in which spring wheat is the principal crop produced, unless some more feasible method is devised for finding the few barberries overlooked and the seedlings that may spring up. It is obvious that there remains a vast amount of work to be done before the area already surveyed can be said to be completely cleared of barberry bushes.

Escaped Barberry Bushes

In spite of the difficulties of the problem presented by the spread of escaped barberry bushes to open woodlands, fence rows, rocky ledges, brushy pastures, and stream banks, each State has endeavored to destroy all bushes, sprouting bushes and seedlings in known areas of escapes. In one area over 40 tons of crushed rock salt were applied to bushes and seedlings. A total of 147,007 escaped bushes has been found on 1,194 properties since January 1, 1923.

Chemical Eradication

Through the investigations of chemical eradication carried on during the past three years, it has been demonstrated that crushed rock salt is the safest and most easily obtainable chemical, being both thoroughly effective and economical for killing barberry bushes. Chemicals cannot be applied to barberries growing near valuable shrubbery or trees. Digging must be employed in these places. In the original survey, 1,643,719 bushes and seedlings on 2,573 properties were treated with chemicals, and, in the resurvey, 896,904 sprouting bushes and seedlings were treated on 1,718 properties. Approximately 410 tons of salt, 619 gallons of sodium-arsenite solution, and 1,240 gallons of other chemicals, such as kerosene and drip oil, have been used in these treatments. Wherever barberries have been found their location has been recorded, the property owner has been notified of their presence, and either he or the field assistants have arranged for their eradication. If the bushes were on lawns or near valuable trees or shrubs, it was necessary to dig them; if elsewhere, they were treated with chemicals. Crushed rock salt was the principal chemical used.

Not every barberry has been discovered, nor has every one found been destroyed completely when discovered. Often nonresident property owners had to be communicated with, or the location of the bushes made it impracticable to eradicate them immediately. Before treating any large area of escaped bushes, or large hedges, salt had to be contracted for and transported. Even when carefully dug, bushes often produce sprouts. Seedlings also spring up from seeds scattered from fruiting bushes.

Spread of Rust

Rust studies have been carried on and are being continued at stations from Colorado to Ohio and from the Canadian border to Texas. Every means possible has been used to find the sources of inoculum. During the past season the progress of infection on grains and grasses and on barberry bushes was studied from Mexico to Canada, and notes were taken on rust distribution and severity, and estimates were made of the losses caused.

Unusually favorable weather conditions for the growth and spread of rust prevailed throughout the eradication area this season. Rusted barberries or sprouting bushes were found in many of the counties which had

previously been covered in the farm-to-farm survey, with the result that many local infections were traced to barberries. Infected barberry bushes and sprouts appeared to be chiefly responsible for the general epidemic in Minnesota and the Dakotas which later spread into Wyoming and Montana. In general, rust appeared very late in Colorado, Wyoming, and Montana, except in a few local situations near infected barberries. Harvest also was late. In southwestern Nebraska and northeastern Colorado stem rust appeared on late-maturing winter and spring wheat, causing considerable loss. This rust apparently advanced from a more eastern source. Infected barberries were reported this year from 48 locations in the eastern and central parts of Kansas, which may help to account for rust in Kansas, Colorado and Nebraska.

Cooperation and Publicity

Much of the success of the year's work has been made possible by the cooperation of the States and other interested agencies. Financial support either through direct appropriations or allotments, has been furnished by the Conference for the Prevention of Grain Rust, and the States, thus enabling us to meet the provision in the appropriation bill that \$125,000 must be matched by funds from the States and other cooperating agencies in order to become available.

Excellent cooperation has been extended by farmers and other individual property owners, by newspapers, and by organizations of bankers, business men, railroad officials, millers, etc. County farm organizations have shown increased interest in the campaign. Demonstration material has been furnished to each State and used at State and county fairs as well as other public gatherings. The conference for the Prevention of Grain Rust has supplied posters, charts, and other literature to schools, banks, post offices and railroad stations, and to all individuals who have shown an interest in the campaign.

Entire Campaign

Since the beginning of the campaign practically all cities and villages within the eradication area have been surveyed. In the farm-to-farm survey an area equivalent to 656 counties has been covered.

In all, 6,038,324 bushes have been located on 62,648 properties. Of these, 3,575,557 were escaped bushes on 4,386 farms. In the five years since the work was begun, 5,388,913 bushes have been destroyed on 59,701 properties and 1,736,451 seedlings on 832 properties.

A grand total of 9,726,348 bushes and seedlings have been found and 8,071,932 destroyed. In addition 237,235 sprouting bushes have been found and destroyed. The remaining 1,654,416 bushes and seedlings are being eradicated as rapidly as arrangements with property owners can be made.

Tables 1 and 2 show the survey results by States for the period January 1 to October 31, 1923. Tables 3 and 4 show the survey results by States from April 1, 1918, to October 31, 1923.



Table 1. Data showing, by States, the number of properties on which barberry bushes and seedlings were found and removed in the Barberry Eradication Campaign from January 1, to October 31, 1923

Period.	:Number of properties on which :Total number of pro- : Number of properties on which									
	: bushes were found					:perties cleared of : seedlings were				
	: bushes.					:				
:	: In country		: Total:		:Dug :Treated: Total:Found:				Destroyed	
	: cities	: Having	: Total :	:	:	:	:	:	: Treated :	: Total
:	: and	: escaped :	:	:	:	:	:	:	:	:
:	: towns	: bushes :	:	:	:	:	:	:	:	:
Colorado	17	25	37	54	4	52	56	0	0	0
Illinois	531	228	601	1132	655	525	1180	54	34	54
Indiana	162	81	258	420	224	173	397	12	8	12
Iowa	178	230	711	889	472	418	890	25	18	25
Michigan	549	209	448	997	967	289	1256	216	177	216
Minnesota	123	40	73	196	178	30	208	14	11	14
Montana	14	2	3	17	14	10	24	1	0	1
Nebraska	114	21	101	215	111	127	238	8	1	8
North Dakota	15	0	55	70	13	55	68	1	0	1
Ohio	1130	58	446	1576	1764	76	1840	13	12	13
South Dakota	35	16	78	114	11	103	114	7	1	7
Wisconsin	544	284	579	1123	855	576	1431	82	26	75
Wyoming	0	0	1	1	6	1	7	0	0	0
Total	3,413	1,194	3,391	6,804	5,274	2,435	7,709	433	288	138
										426

Table 2. Data showing, by States, the number of barberry bushes and seedlings found and removed in the Barberry Eradication campaign from January 1, to October 31, 1923.

Period	Number of bushes found				Number of bushes destroyed				Number of seedlings			
	In country		In country		Total		Total		Total		Total	
	In cities and towns	Escaped	Total	Dug	Treated	Total	Found	Dug	Treated	Destroyed	Total	
Colorado	54	131	169	7	394	401	0	0	0	0	0	0
Illinois	3,841	12,744	22,561	11,910	14,895	26,805	1,513,016	7,790	1,505,226	1,513,016	1,513,016	
Indiana	589	46,280	47,931	2,766	20,011	22,777	232	196	36	232	232	
Iowa	5,344	3,940	17,296	7,201	12,206	19,407	2,379	586	1,793	2,379	2,379	
Michigan	7,062	68,687	70,099	69,083	13,359	82,442	165,958	133,132	32,826	165,958	165,958	
Minnesota	467	3,970	2,110	3,071	1,643	4,714	490	180	310	490	490	
Montana	118	706	706	132	383	515	650	0	645	645	645	
Nebraska	887	170	2,077	799	2,064	2,863	2,118	400	1,718	2,118	2,118	
N. Dakota	102	0	2,282	91	2,293	2,384	3	0	3	3	3	
Ohio	6,228	602	3,568	14,968	3,575	18,543	336	276	60	336	336	
S. Dakota	613	2,484	3,398	309	3,707	4,016	1,009	400	609	1,009	1,009	
Wisconsin	2,044	7,293	9,404	14,721	15,652	30,373	19,836	4,626	10,310	14,936	14,936	
Wyoming	0	0	1	125	1	126	0	0	0	0	0	
Total	27,354	147,007	181,602	125,183	90,183	215,366	1,706,027	147,586	1,553,536	1,701,122	1,701,122	

Table 3. Date showing, by States, the number of properties on which barberry bushes and seedlings were found and removed in the Barberry Eradication Campaign from April 1, 1918 to October 31, 1923.

Period	Number of properties on which bushes were found.			Total number of prop- erties cleared of bushes			Number of properties on which seedlings were			
	In cities	In country Having	Total	Dug	Treated	Total	Found	Dug	Treated	Total
	and towns	escaped bushes								
Colorado	1,543	55	1,598	1,643	52	1,695	0	0	0	0
Illinois	8,930	686	1,680	9,740	525	10,265	54	34	20	54
Indiana	3,414	195	959	4,147	173	4,320	12	8	4	12
Iowa	6,957	586	2,322	8,837	418	9,255	25	18	7	25
Michigan	4,753	1,255	4,569	7,457	289	7,746	216	177	39	216
Minnesota	3,103	397	1,723	4,785	34	4,819	339	336	3	339
Montana	170	4	51	210	10	220	1	0	1	1
Nebraska	3,133	64	579	3,264	127	3,391	8	1	7	8
N. Dakota	510	1	291	744	55	799	2	1	1	2
Ohio	6,260	148	1,364	7,158	84	7,242	13	12	1	13
S. Dakota	445	96	508	750	103	853	87	81	6	87
Wisconsin	6,701	898	2,442	8,435	576	9,011	82	26	49	75
Wyoming	74	1	14	84	1	85	0	0	0	0
Total	45,993	4,386	16,655	62,648	2,447	59,701	839	694	138	832

Table 4. Data showing, by States, the number of barberry bushes and seedlings found and removed in the Barberry Eradication campaign from April 1, 1918 to October 31, 1923.

Period	Number of bushes found :			Number of bushes destroyed :			Number of seedlings				
	In cities and towns :	In country :		Total :	Dug :	Treated :	Total :	Found :	Dug :	Treated :	Total
		Escaped :	Total :								
Colorado	19,586	2,546	4,638	24,224	23,829	394	24,223	0	0	0	0
Illinois	100,610	40,207	68,674	169,284	141,696	14,895	156,591	1,513,016	7,790	1,505,226	1,513,016
Indiana	76,506	54,354	68,298	144,804	96,770	20,011	116,781	232	196	36	232
Iowa	648,805	54,906	137,931	786,736	768,428	12,206	780,634	2,379	586	1,793	2,379
Michigan	51,505	223,164	290,765	342,270	290,173	13,359	303,532	165,958	133,132	32,826	165,958
Minnesota	592,091	79,466	189,463	781,554	779,792	1,725	781,517	19,590	19,180	310	19,490
Montana	6,776	748	3,075	9,851	8,812	383	9,195	650	0	645	645
Nebraska	72,428	5,391	19,398	91,826	88,979	2,064	91,043	2,118	400	1,718	2,118
N. Dakota	14,367	150	7,455	21,822	19,529	2,293	21,822	153	150	3	153
Ohio	206,792	21,229	33,092	239,884	223,657	5,324	228,981	336	276	60	336
S. Dakota	23,125	18,663	33,200	56,325	47,611	3,707	51,318	17,188	16,579	609	17,188
Wisconsin	279,834	3,074,732	3,085,769	3,365,603	2,803,657	15,652	2,819,309	19,836	4,626	10,310	14,936
Wyoming	3,946	1	195	4,141	3,966	1	3,967	0	0	0	0

Total : 2,096,371 : 3,575,557 : 3,941,953 : 6,038,324 : 5,296,899 : 92,014 : 5,388,913 : 1,741,456 : 182,915 : 1,553,536 : 1,736,451

